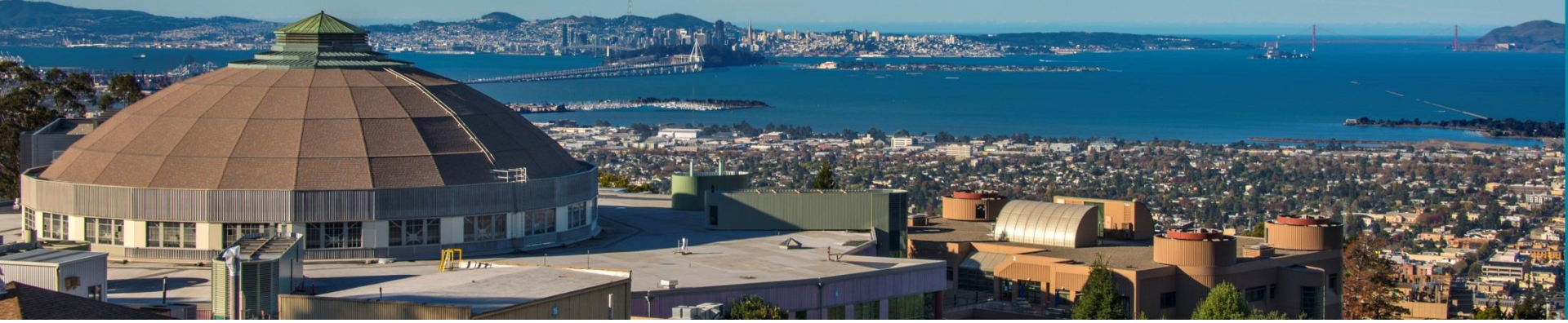


Baseline Evaluation of ACs in Indonesia and Policy Implications

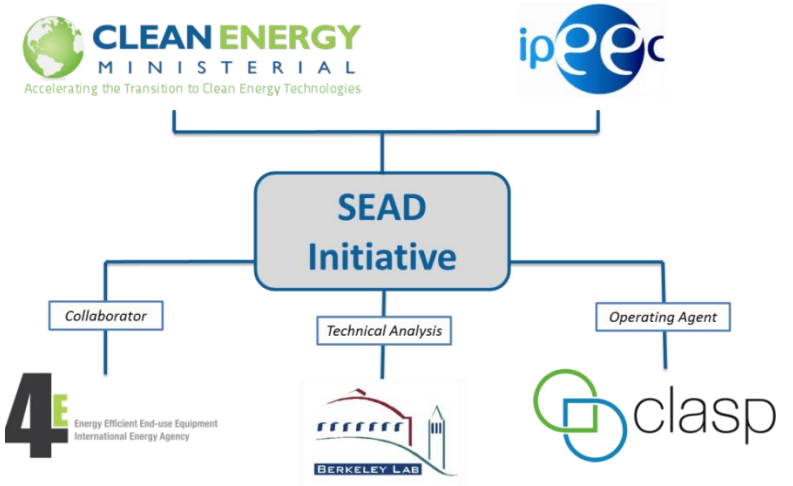
Virginie Letschert
International Energy Studies
Lawrence Berkeley National Laboratory

EEDAL Conference, September 13-15 2017
Irvine, California

Clean Energy Ministerial and the Super-efficient Equipment and Appliance Deployment (SEAD) Initiative

The Clean Energy Ministerial (CEM) is a forum of the world's largest and most forward-leaning countries working together to **accelerate the global transition to clean energy**.

- **High-level political engagement** paired with **sustained initiatives** and **high-visibility campaigns** to raise political ambition and support clean energy policy and technology deployment.
- SEAD Initiative is a **voluntary collaboration among governments** working to promote the manufacture, purchase, and use of **energy-efficient appliances**, **lighting, and equipment** worldwide.



Government of Indonesia has joined SEAD in July 2014

LBNL Activities in Indonesia

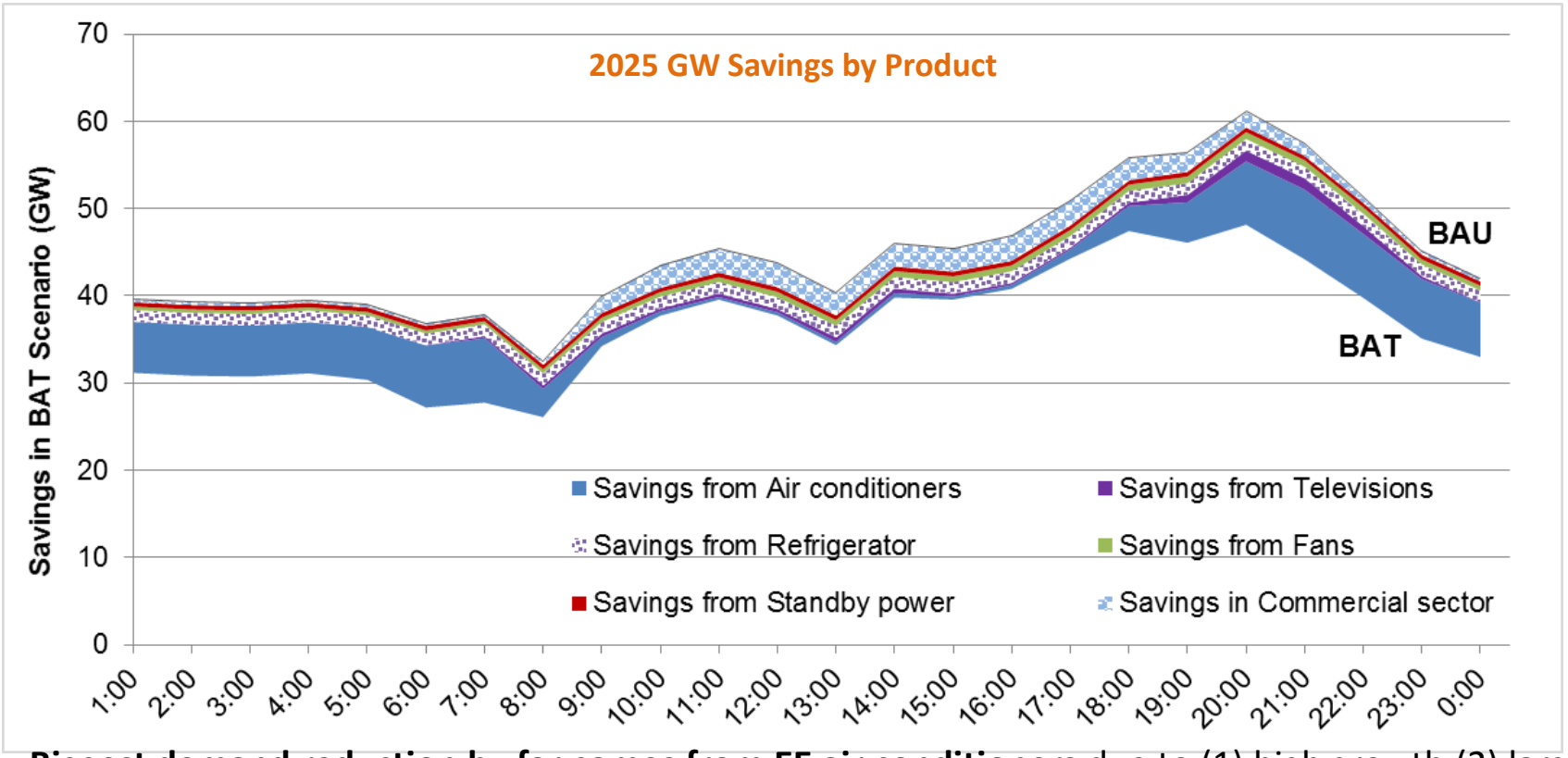
Since 2015, LBNL collaborates with MEMR to provide technical analysis, tools and trainings to optimize energy efficiency policies

Since 2016, LBNL collaborates with CMMA, MEMR to provide broad policy direction to develop a roadmap to 10GW savings from EE in Indonesia

LBNL research contributes to US-Indonesia Energy Policy Dialogue, Power Working Group, Bali Clean Energy Forum.

Focus on AC - Rationale for Indonesia

LBNL Peak Load analysis shows that appliance efficiency programs in Indonesia could eliminate the need for over 20 new 500-MW power plants by 2025.



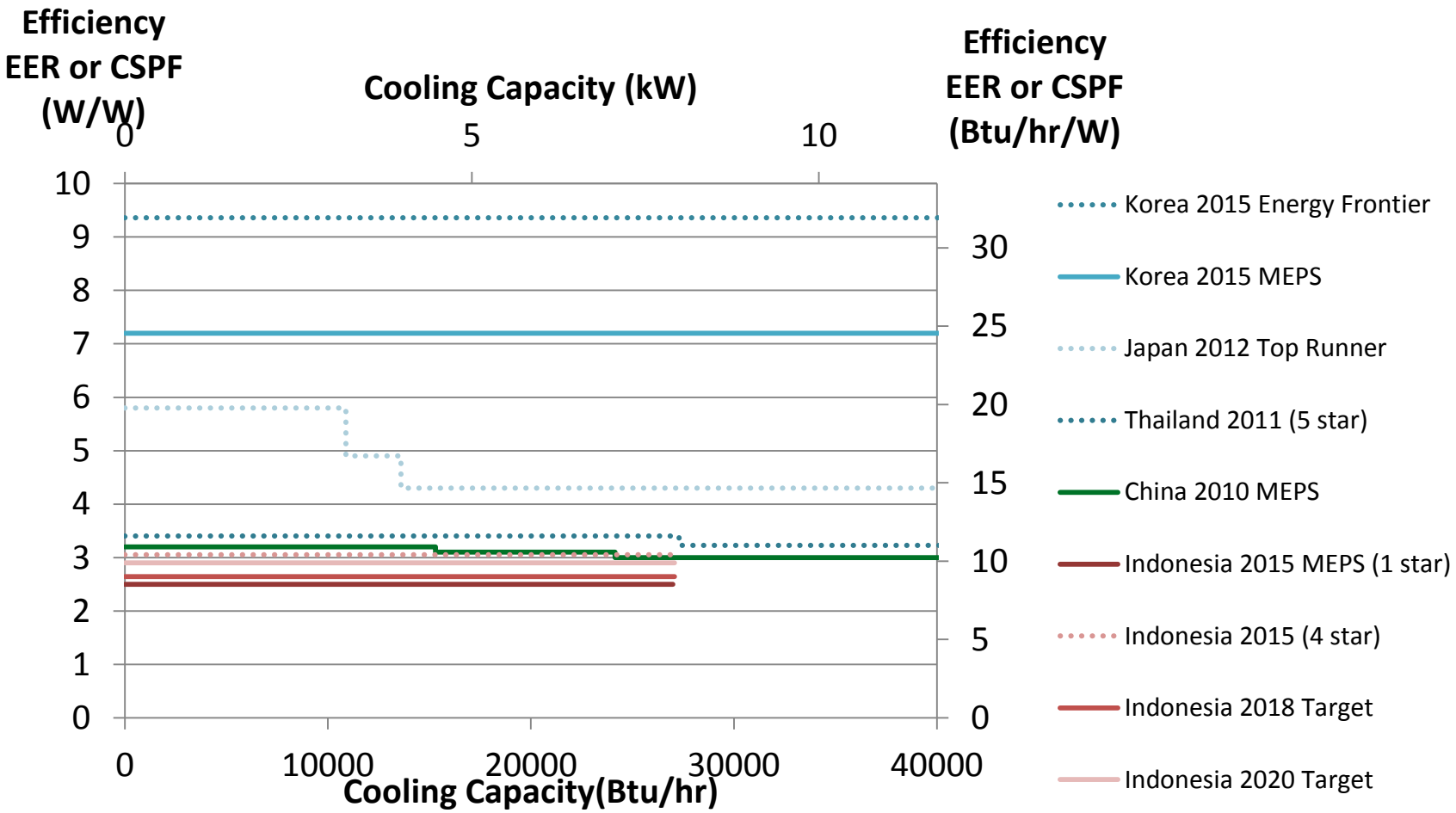
- **Biggest demand reduction by far comes from EE air conditioners** due to (1) high growth (2) large end-use (3) high peak coincidence factor and (4) strong technology opportunity

S&L in Indonesia, progress to date

- Directorate for Energy Conservation created in 2010
- UNDP BRESL (2013): draft MEPS and labels for CFLs, ACs, refrigerators, fans, rice cookers, and motors.
- Only two MEPS have been turned into regulations CFLs (2014) and AC (2015) (EER= 2.5)
- Are being considered: LEDs, washing machines, electric irons, televisions and pumps.
- For AC, MEMR adopted the ASEAN-SHINE roadmap with targets to 2020 (EER= 2.9)

Regional comparison of S&L programs

AC MEPS and Voluntary Targets in selected Asian countries



IDEA – International Database of Efficient Appliances

- Database of potentially millions of data points on the characteristics, efficiency and price of appliances, lighting and other energy-using equipment.
- IDEA is built on a technique of *web-crawling*, which employs computer programming (scripts) to 'harvest' data posted publicly on websites
- Once IDEA has been established, data can be collected periodically in order to track actual progress.
- IDEA is used to support CEM AC Challenge (2016)

Application of IDEA in Indonesia

MEMR Certification database

Government Efficiency Database

Online retailers

Lazada
Binneka
Electronic City
Wahana Superstore

Online Retail Data

Unified Product Database

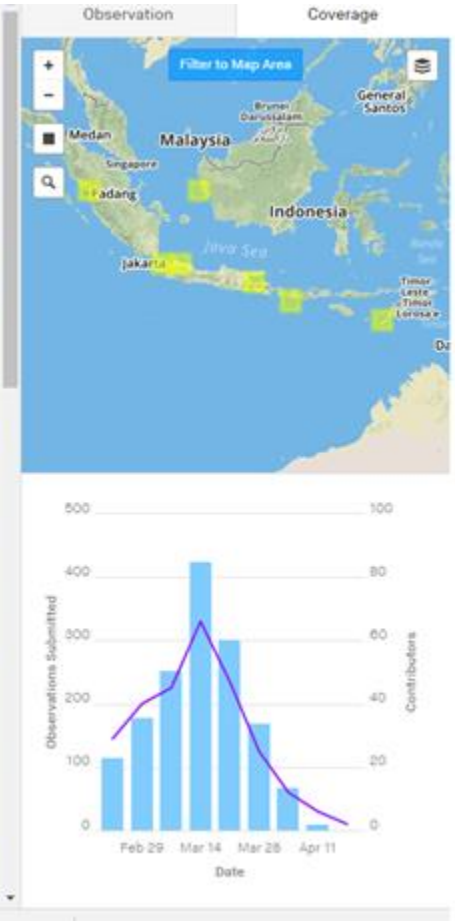
Manufacturer Online Specifications

Manufacturer Websites

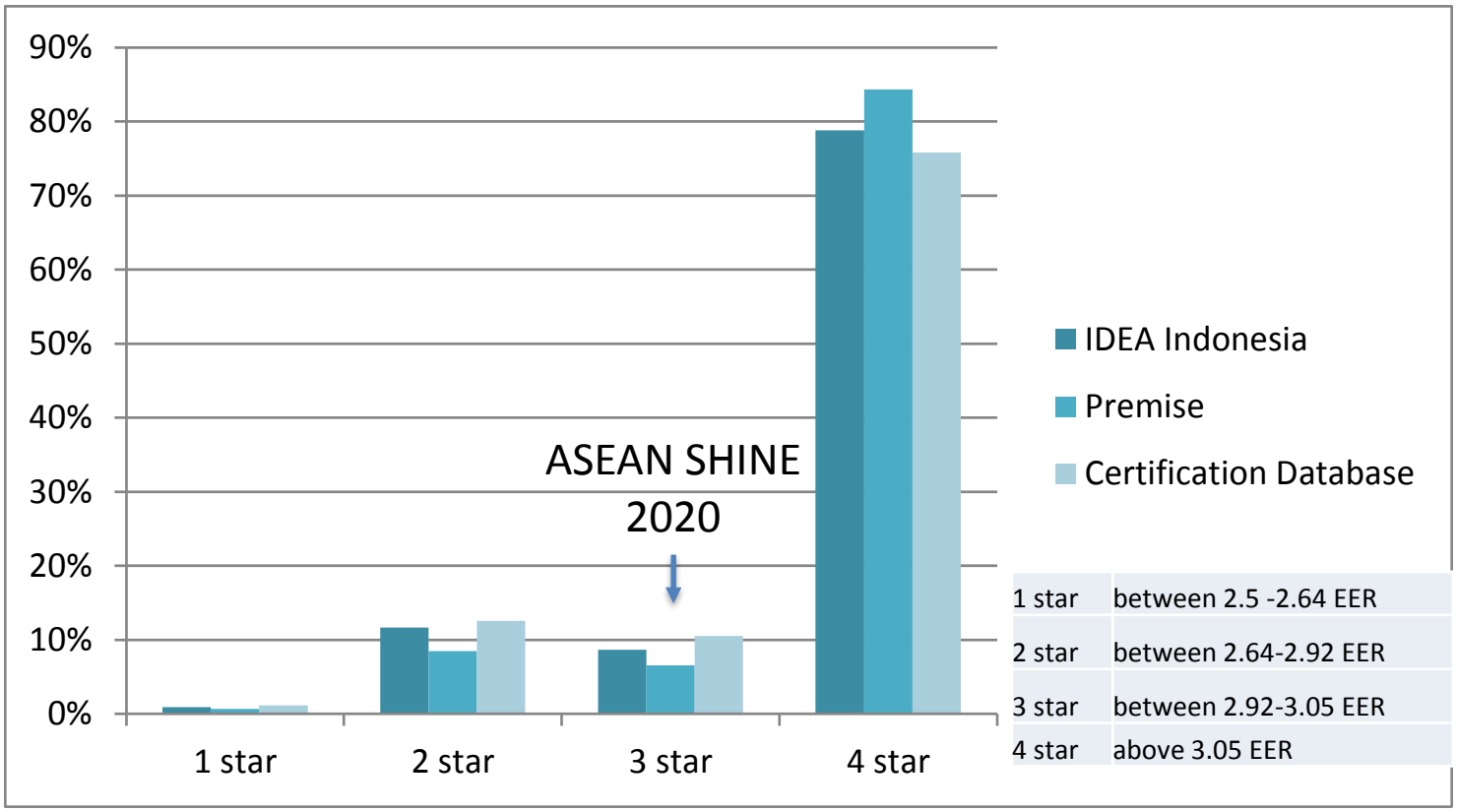
AUX
Changhong
Dast
Haier
LG
Midea
Panasonic
Polytron
Samsung
Sanken
Sharp

Validation - Data Collection in Retail Stores

PREMISE

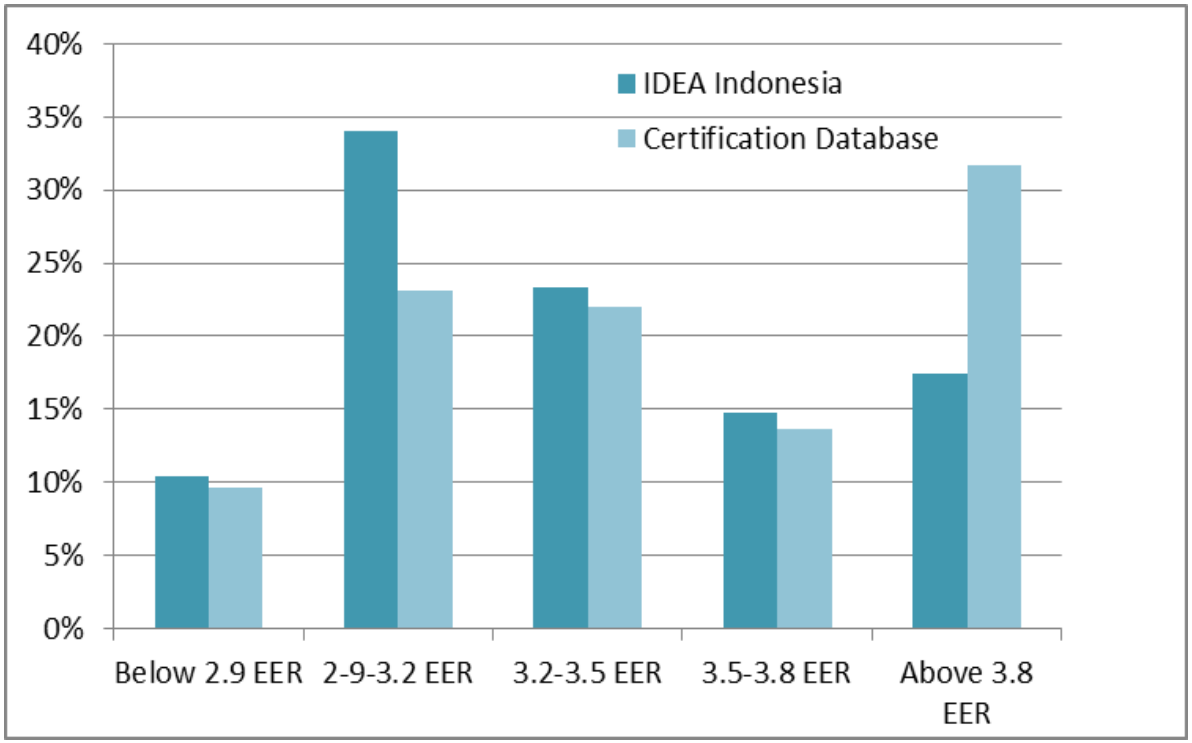


Results – Efficiency Distribution (1)



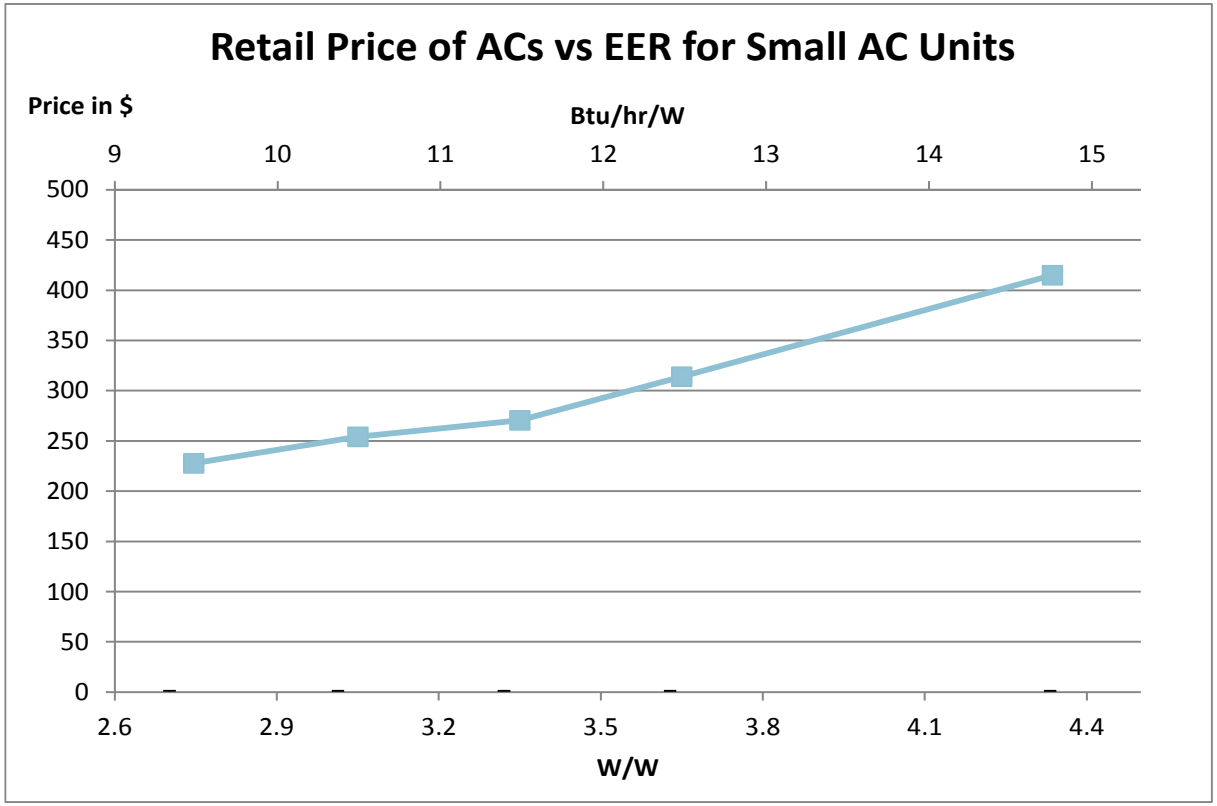
- *Current and planned MEPS (ASEAN SHINE roadmap) have limited impact*
- *Consumer cannot differentiate high efficiency for 80% of models*

Results – Efficiency Distribution (2)



- *Example of a rescaling of the label that would allow differentiation between low and high efficiency*

Cost-benefit analysis

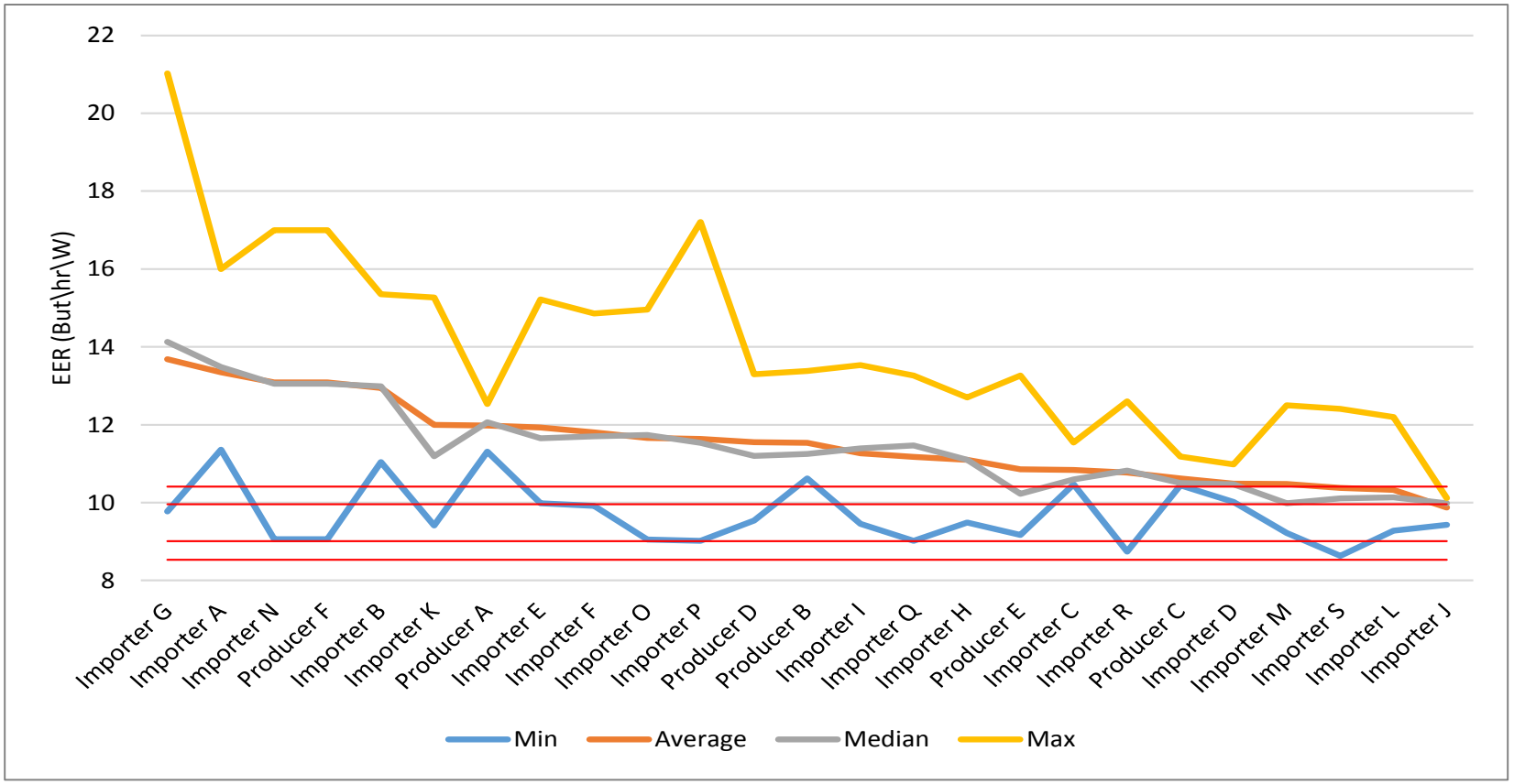


- *Data shows very limited price increase with efficiency up to 3.3 EER*
- *Above 3.3 EER, inverters may be required – and data shows that inverters premium is still high*
- *At 3.3 EER -for average unit 3/4Pk, 5.6hrs/day, 7 year lifetime. 12% DR*

  CCE = 2.9 cts

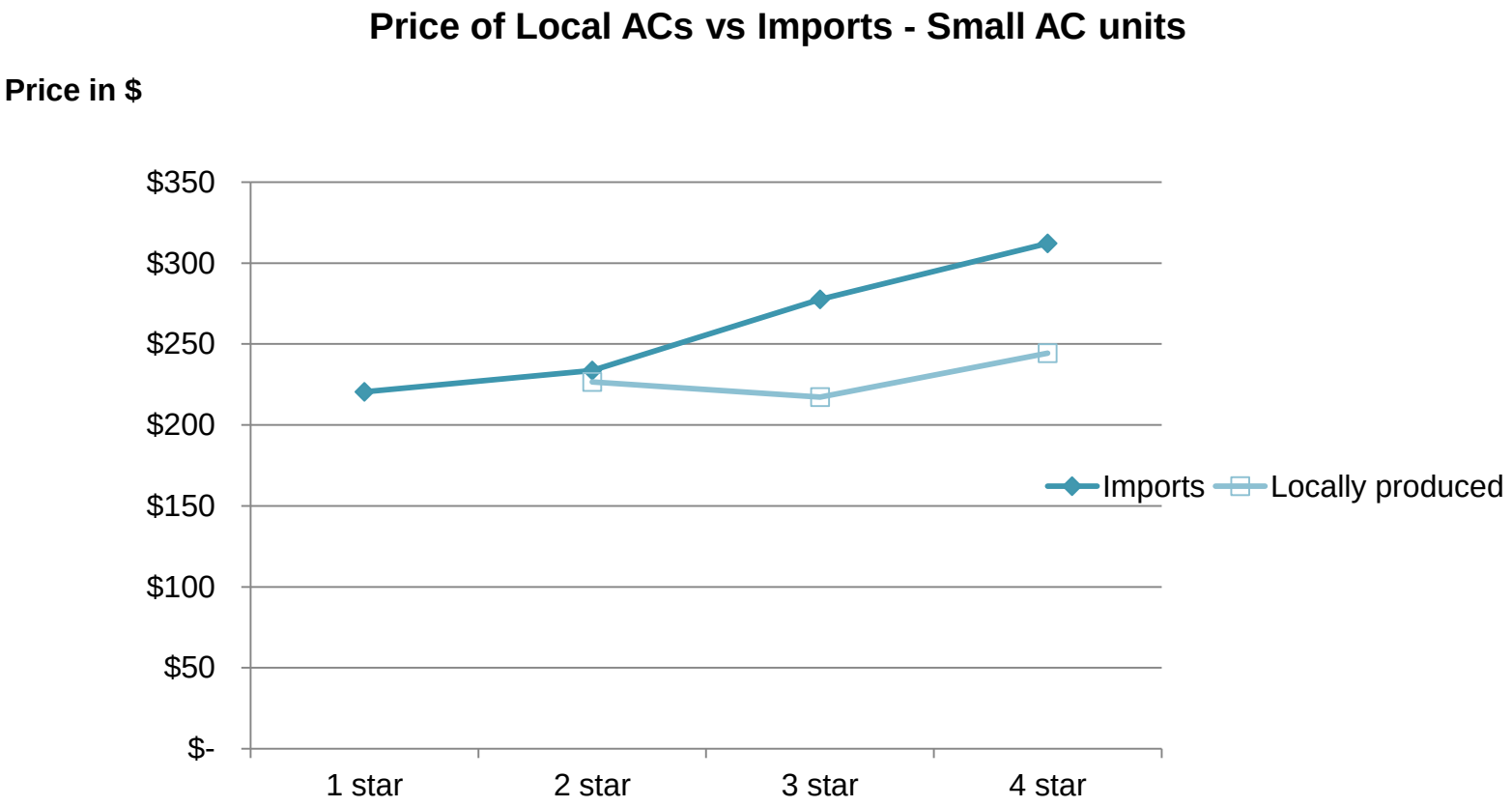
- CCE for all efficiency levels <7cts/kWh to be compared to 10cts/kWh price of electricity **(investment in inverter technology is cost-effective)**

Importers and local manufacturers



- The market is dominated by international brands; four brands (Samsung, Sharp, Panasonic, LG) represent 75% of the models are either imported or assembled locally, and include both some of the most efficiency and some of the least efficiency products.
- 100% of local manufacturers have at least one 4-star certified AC model

Competitiveness of Local Industry



- Data shows that even at higher efficiency level, local products are still cheaper than imported products
- High MEPS may offer great opportunity for local manufacturing to increase market share.

Recommendations & Takeaways

- Revise MEPS and 4-star label to go beyond the ASEAN SHINE roadmap
- Consider complementary/non-regulatory program such a bulk procurement to pull the market toward more EE products
- In developing the specifications for these EE programs, it is critical to consider market data (baseline) and impacts on stakeholders
- Existing Steering committee on the 10GW Roadmap could be used to identify bottlenecks, regulatory issues (our data doesn't find any technical barrier)
- Maintain efforts on data collection, and build analysis capabilities at MEMR
- Ramp up evaluation activities to check that the program is delivering the intended savings to make EE a viable resource for Indonesia energy future.
- Given market similarities, the baseline results from Indonesia are likely to hold true in other ASEAN countries.

Thank you!

For more information:

https://ies.lbl.gov/

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